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# Clinical Treatment and Analysis of 58 Cases of Chronic Suppurative Otitis Media

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**ABSTRACT** **Objective:** Analyzing cause of disease and clinical performance of clinical patients with chronic suppuratie otitis media, as well as discuss the effective surgical treatment methods and post-operative nursing prevention. **Methods:** 58 cases of chronic suppurative otitis media patients, clinical data and follow-up results were retrospectively analyzed during March 2008 to July 2011 in our hospital, in order to investigate the treatment effect of the operation. **Results:** 58 cases (60 ears) patients were indicated the procedure, including 33 ears open vesssed dash forward line, and 17 ears did close type papilloma wildly improved, and 10 ears did for drum sinus and attic area open treatment. After 2 years of follow-up observation, fifty-six ears was survived, with the survival rate of 93.3%, and second perforated eardrums happened in 4 ears, accounted for 6.7%. After eight months, There were 31 ears with hearing improvement of 10−15 dB (accounting for 51.7%), 22 ears with hearing improvement of 15−30 dB (accounting for 36.7%), 3 ears with no hearing improvement (accounting for 5.0%), 4 ears with mild hearing loss (accounting for 6.7%); total effective rate of hearing improvement was 88.3%, and hearing ability has improved significantly statistical significance. **Conclusion:** According to the different patients with the disease choosing appropriate surgical method, it has a great significance to enhance the curative rate, reduce post-operative complications and recrudescent possibility.

**KEYWORDS**
Chronic suppurate
Otitis media
Clinical treatment

## 1. Introduction

Chronic suppurative otitis media (CSOM) is a common disease of the ear, and common occur during childhood. Due to its main symptom is purulent ear, or called "pus ear", hence if not treated properly, it often lead to deafness. The main manifestations were inflammation of suppurative tympanic mucosa layer [1] and easily complicated with chronic mastoiditis, mucosal hyperemia, swelling, thickening and increasing of glandular secretion. Clinical symptoms are mostly intermittent otorrhea, tympanic membrane perforation and mild conductive hearing loss as the main features. Severe cases will also destroy the middle ear bone, and resulting in intracranial infection. According to the pathological and clinical manifestations of chronic suppurative otitis media, it divided into three types, namely, simple type, caries type and cholesteatoma type [2]. Clinical manifestations of light herpes, not the degree of harm to human body, however symptoms of cholesteatoma type are more serious, as disease progression it may even become life-threatening. For the treatment of CSOM, method of surgical operation can be used together with the drugs. For a complete debridement, surgical for reconstruction of ossicular chain, and tympanic membrane can be done. Effective treatment will lead to purulent ear reduced, dry ear, function restore of middle ear, and hearing level recovery. The clinical data of 58 patients with chronic suppurative otitis media were treated in our hospital from May 2008 to July 2011. The clinical data of patients with chronic suppurative otitis media were as follows.


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## 2. Materials and methods

### 2.1. Clinical data

58 cases (60 ears) of chronic suppurative otitis media were

treated in our hospital from March 2008 to July 2011. 35 patients were male and 23 were female. The age was between 4~51 years old, and average age was 12.3 ± 5.2 years old. There was no history of drug allergy, sinusitis and chronic tonsillitis. According to the clinical manifestations can be divided into 3 types, including simple type 21 ears, caries type 19 ears, 20 ears with cholesteatoma. Unilateral lesions in the left ear was 38 cases, 18 cases of unilateral right ear, both ears were infected accounted 1 case. Before operation, the hearing loss was between 8–90 dB.

### 2.2. Clinical manifestations

The nature and timing of patients discharging is different because of the severity of the lesion, to a lesser extent, it cause purulent; however if the severity was sustained, it secrete thick yellow pus and cause stink. Patients may suffer from otorrhea, hearing loss, external auditory canal often purulent exudate and other symptoms. Commonly, some patients also exhibit earache, ear congestion, tinnitus, vertigo, headache, fever etc. Acute attack induce headache, earache, dizziness and fever, it turn into serious when appear the symptoms such as facial paralysis and meningitis. Central orbicular or early reniform tympanic membrane perforation and even can observed marginal relaxation and small perforation, and the area often by pus scab coverage. If not carefully remove of pus scab, it very likely to be misdiagnosed. Besides that, in some cases it was misleading by external auditory canal or tympanic cholesteatoma granulation caused by endoscope that not clears. Before surgery, all patients were examined by pure tone audiometry and electrical measurement to check and CT detection of temporal bone. It including intermittent discharging in 53 ears, tympanic membrane perforation in 30 ears, conductive deafness in 17 ears, mixed deafness in 21 ears. Otoendoscopic tympanic, mucosal hyperemia, swelling, granulation of ossicular chain, was the cause of ossicular defect.

## 3. Method

Anesthetic dose adjusted according to the patients' condition and normal adults generally took local anesthesia or general anesthesia, while children were administed under general anesthesia. It starts with the incision of the ear, then open mastoid bone wall, follow by antrum and tympanic cavity, finally cleaning lesions. From the microscopic observation of lesions, cleaning mastoid cavity, tympanic sinus and ossicular chain around the granulation tissue, a drum sinus inflammatory exudate drains. It does so as to avoid damage to the normal physiological structure and function of ossicles. Granulation tissue can be cleaned at the same time detection of the ossicular chain activity. The activity was acceptable, if from the tympanic antrum, injected saline can perforation flowing smoothly, and when "ventilation" smooth drainage, at the same time it able to carry out the repair perforation of tympanic membrane. The appropriate surgical treatment for patients with different types of disease including,

(1) Open radical mastoidectomy: CT showed soft tissue density within the mastoid, drum sinus mouth narrow thresholds greater than 60 dB and for cholesteatoma type CSOM is feasible with this type of operation. Initially, cut the posterior wall of low external auditory meatus, then collected health cortical bone powder added to a small amount of normal saline in lightly polished into mud form and inserted into the mastoid cavity, after that cover the surface of the original fascia, to prevent the loss. The 38 ear ossicles suffer from different degree of damage patients and the reconstruction of ossicular chain was according to their own situation.

(2) Modified radical mastectomy of closed type mastoid: CT showed mastoid and middle ear cavity soft tissue density, with the threshold which less than 60 dB and a small amount of granulation tissue surrounding the ossicular chain were performed during operation. To ensure the integrity of the posterior wall of external auditory meatus, first clean the mastoid cavity, tympanic sinus and adjacent to the ossicular chain lesions of tympanic sinus. Attic area open treatment CT revealed confined soft tissue density in the tympanic sinus, attic and mastoid cavity which only small amounts of necrosis occur during the operation. Ear endoscope on the front drum gorge, drum gorge, before attic space and Eustachian tube was perform and lesions were found after a thorough screening.

## 4. Results

58 cases (60 ears) patients had no severe intra and postoperative bleeding, cerebrospinal fluid leakage, in addition to the original suffering from facial paralysis, meningitis, brain abscess. 21 ears have no new complications increased, which resulted in a transient vertigo or tinnitus and other symptoms. In 7 cases, medical personnel expand blood vessels in a timely manner for 8 days then the symptoms were relieved. 3 cases patients for intra-operative use of iodoform gauze strip ear resulted in external auditory meatus allergic symptoms which caused external auditory tract moderate red, swollen, hot, touch no tenderness, and surgical site has a yellow liquid leaking. The use of antibiotic gauze strip, and taking anti-allergy drugs to counter the complication. After 2 years of follow-up, the treated patients were with a significant improvement in hearing. Which within the 56 ears, it occurred two times perforated of the membrane in 4 ears. After 8 months after operation, the hearing was improved, and the frequency of speaking was increased by 10–15 dB, and the hearing was improved by 15–30 dB. However, 3 ears were not significantly improved, and 4 ears were slightly decreased. The effective rate was 88.3%. The effect of each type of otitis media was better (Table 1).

Post-operative hearing improved significantly, and the threshold value is greatly improved compared with the preoperative, by comparison with statistical significance

**Table 1.** Comparison of the threshold values of gas before and after operation (dBHL).

| | Frequency test (kHz) | | | Average hearing |
|---|---|---|---|---|
| | 0.5 | 1 | 2 | |
| Pre-operative | 41.02 ± 7.01 | 43.13 ± 8.76 | 40.96 ± 9.88 | 41.23 ± 7.63 |
| Post-operation | 48.67 ± 8.76 | 51.03 ± 8.12 | 50.02 ± 7.63 | 49.51 ± 6.98 |

($p < 0.05$).

## 5. Conclusions

Chronic suppurative otitis media is a common clinical disease of the ear. It not only affects the hearing for the patient, but also affected the patient's daily life with a lot of inconvenience. In serious patient, it can be induced by intracranial infection, resulting in leakage of cerebrospinal fluid. It may cause by improper treatment from acute suppurative otitis media, which bacterial toxicity is too strong, body resistance force is too weak or concurrent mastoiditis. The continued pus secreted for more than 1 or 2 months were conforming the occurrence of chronic suppurative otitis media. The incidence of the disease is higher, in recent years. More than a thousand domestic students surveyed, the incidence of variable is 0.5 to 4.3%. Which the investigated incidence rate of Shandong, Henan, Guizhou Province farmers was 1.6%. The incidence rate of primary school students in the UK was 0.9%. Adults which after 40 years of age was rarely occurs. The disease caused by varied reasons, such as chronic diseases of nose, throat, and sinusitis, tonsillitis, adenoid hypertrophy, entry of inflammatory secretions the Eustachian tube, and lesions interfere with the pharyngeal ostium of drainage. Besides that, it may due to chronic systemic diseases such as anemia, diabetes, tuberculosis and nephritis. It secondary to acute infectious diseases such as scarlet fever, measles and pneumonia, acute middle ear mucosa necrosis, inflammation invades and mastoid process. Moreover, it especially secondary to drug resistance larger *Proteus* and *Pseudomonas aeruginosa* bacillus infection, and the treatment was complicated. When the body resistance weakened, the lesions usually come with mastoiditis concurrent, ear leakage, earache, tinnitus, aural purulent sex secretion exudation symptoms. Microscopic examination of the secretion found the main pathogen is *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Escherichia coli*, of which the *Pseudomonas aeruginosa* found mostly. When the pathogen of the respiratory tract infection in the human body, coincides with the body resistance drops or did not receive timely treatment, it usually evoked CSOM. General CSOM often due to persistent acute lesion conversion, it is generally believed that if acute inflammatory does not subsided within 7–9 weeks, generally it consider converted into chronic disease [3]. Surgical treatment is a common means of clinical treatment of CSOM to debridement, infection control, reconstruction of ossicular chain, restore hearing level, and ensure that the dry ear. Study of the object of 33 ears open radical operation, 17 ears of closed type treatment, compared with advantages and disadvantages: the former can be applied to a variety of CSOM disease, surgical procedures in treatment of the lesion site is more clear, can more complete cleaning of the lesion group, so that purulent fluid is completely discharged, reduce the co-current infections. However, due to the failure of the external auditory canal, the posterior wall cannot be completely preserved, resulting in the failure of the acoustic barrier and hearing loss. The open state of the long time of the cavity is open to the dry ear time [4]. The latter, due to the absence of external auditory canal that cause damage, so the sound wave conduction normal function, for better hearing and dry ear faster. Moreover, due to the mastoid cavity was in the closed state, it does not produce a lot of crusts, and external auditory canal also possesses self-purification function, which resulted in a reduction of the crust. However, the posterior wall of the external auditory canal to the site of the lesion was prone to bacteria growth.

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